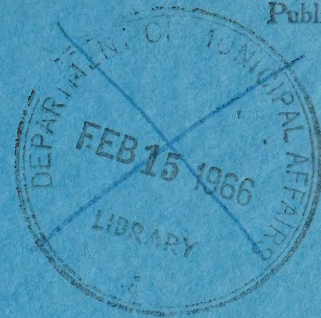


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THE  
ONTARIO WATER RESOURCES  
COMMISSION  
REPORT ON  
MUNICIPAL WATER POLLUTION SURVEY  
VILLAGE OF MARKHAM

1963 and 1964







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## REPORT ON

### MUNICIPAL WATER POLLUTION SURVEY

Village of Markham

by

DIVISION OF SANITARY ENGINEERING

Ontario Water Resources Commission

November 1963

January 1964



## INTRODUCTION

The purpose of this survey was to locate and record all significant sources of water pollution within the Village of Markham. Surveys of this nature are conducted routinely and upon request throughout the Province of Ontario by the Ontario Water Resources Commission as a basis for evaluating any existing or potential sources of pollution.

Recommendations are made pertaining to water pollution abatement and the Commission expects that corrective measures will be taken by those concerned.

## GENERAL INFORMATION

The Village of Markham, with a population of approximately 5,000 is situated at the junction of Highways No. 48 and No. 7.

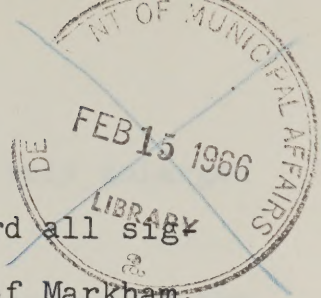
### 1. Water Supply

Briefly, the water supply for the village is provided by a single well. The water is pumped from the well to a 60,000 gallon elevated tank and to the distribution system. No chemical treatment is provided.

The water works was constructed as a joint project between the OWRC and the Village of Markham. The works is operated by the Division of Plant Operations of the Commission.

### WATER POLLUTION CONTROL PLANT

In 1958, the village, in conjunction with the OWRC, initiated a project for the construction of activated sludge water pollution control plant and the associated collection system. The construction of this project commenced in September 1959 and was substantially completed in July 1961. The plant at present, is capable of providing







complete treatment for 0.3 mgd. The plant can be ultimately enlarged to serve 13,300 persons an associated flow of 1.3 mgd.

A treatment works is located at the south-east extremity of the village. For reference, brief details of the plant are presented as follows.

Placed in operation - fall of 1960

Design flow - 0.33 mgd

Treatment - sewage grinding, grit removal, primary sedimentation, aeration tank, secondary clarification, sludge digestion, chlorination.

Receiving stream - tributary of the Rouge River (Exhibition Creek).

#### OPERATING DATA

The totalizer on the flow recorder cannot record any flow less than approximately 90,000 gpd. Considering that the flow is below this figure most of the time, no significant flow data is available. However, it is estimated that the average daily flow approximates 0.135 mgd.

A summary of the sanitary chemical quality of the plant effluent and the basic plant efficiencies is given below:

#### Average BOD

Final Effluent ..... ppm ..... 21.8

Reduction ..... % ..... 90.

#### Average Suspended Solids

Final Effluent ..... ppm ..... 26.8

Removal ..... % ..... 86.

The above data is taken from the records arranged by the Division of Plant Operations of the OWRC, and is based on the result tests of samples submitted routinely from January to December 1963.

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## SEWER SYSTEM

Reportedly, sanitary sewers service approximately 95 per cent of the municipality. In instances where there are no sanitary sewers, private sewage disposal systems are used.

Storm sewers are provided for only portions of the municipality with the remaining sections relying on open ditches to convey storm water to the adjacent watercourses.

## DRAINAGE

The Village of Markham lies entirely within the Rouge River Watershed, and drainage for the village is provided by two tributaries of the Rouge River in addition to the river itself. The two watercourses traverse the village, one on the east side and the other on the west side. They flow in a southerly direction with their respective confluences with the Rouge River located immediately south of Highway No. 7. The tributary which passes through the village east of Highway No. 48 is referred to in this report as Exhibition Creek, and the stream traversing the community on the west side of Highway No. 48 is described as Markham Creek.

## COMMENTS

It is noted that in 1963, the average sanitary chemical quality of the effluent from the water pollution control plant slightly exceeded the OWRC objectives of 15 ppm BOD and 15 ppm Suspended Solids.

The Industrial Wastes Branch of this Commission is presently investigating the industrial waste from one of the industries in the municipality. Suggestions have been made to the company with respect to remedial action which would result in a more satisfactory effluent from the industry.





## ANALYSES OF SAMPLES

The laboratory results of the bacteriological examinations and chemical analysis of the samples collected from the two creeks that traverse this village and from the sewer outlets discharging a dry weather flow are presented in Table I which is appended to this report.

## SIGNIFICANCE OF LABORATORY RESULTS

The OWRC objectives for surface waters in Ontario are listed as follows:

5-day BOD --	not greater than 4 ppm
Membrane Filter Coliform Count --	not greater than 2,400 coliform organisms per 100 ml.
Phenolic Equivalents --	average not greater than 2 ppb maximum not greater than 5 ppb
pH --	6.7 to 8.5

The objective with respect to the maximum concentration limits in effluents from storm sewers, water pollution control plants, and industries are listed below:

5-day BOD --	not greater than 15 ppm
Suspended Solids --	not greater than 15 ppm
Phenolic Equivalents --	not greater than 20 ppb
Ether Solubles (oil) --	not greater than 15 ppm
pH --	5.5 to 10.6

The chemical analyses and bacteriological examinations of the samples collected from the two tributaries of the Rouge River and the Rouge River in the vicinity of the Village of Markham met the OWRC objectives in all but one instance.

In general the quality of the water was not impaired in the vicinity of this municipality. The village appears to have established





control of water impairment in this area. However, the future purposes for which these watercourses are used, should be rigidly controlled if the present programme is to be maintained.

#### SUMMARY

A water pollution survey was carried out in the Village of Markham on November 27, 1964. In general the water did not appear to be impaired in the vicinity of this municipality. The village is served by a modern water works and a water pollution control plant both operated by the OWRC.

The sewage treatment plant has encountered operational problems with particular wastes. The Industrial Wastes Branch of this Commission has recently put forward suggestions with respect to remedial action which would result in a more satisfactory effluent from the industry.

#### RECOMMENDATIONS

The industry concerned, should improve their waste treatment facilities in order that a more satisfactory effluent will be discharged to the municipal sewage works.

All of which is respectfully submitted.

District Engineer \_\_\_\_\_

P.G. Cockburn, P. Eng.

Approved by \_\_\_\_\_

K.H. Sharpe, Director.

bw





TABLE 1-1

[illegible]





TABLE 1-2

SAMPLING POINT NO.	LOCATION	DATE EXAMINED	COLIFORMS PER 100 ML		5-DAY BOD	TOTAL		SOLIDS		TURBIDITY
			I.N.	M.F.		SUSP.	DISS.			
ROUGE										
RGX-12.5 P	4" Ø TILE OUT- FALL FROM	JAN. 31/64	NO FLOW NOTED							
RGX-12.5 P-2	6" Ø TILE OUT- FALL FROM	JAN. 31/64	INSUFFICIENT FLOW FOR SAMPLING							
RG-12.6	ROUGE RIVER AT Hwy. #48	MAY 10/61								
MARKHAM CREEK										
RGM-13.0	MARKHAM BRANCH AT ROAD BELOW Hwy. #7	JULY 24/61		49,300	1.4	286	--	--	1	
		OCT. 25/62		2,600	4.1	312	--	--		3.3
		NOV. 27/63		33,000	16.0	348	21	327		
		JAN. 31/64		4,200	1.7	336				2.1





TABLE 1-3

SAMPLING POINT NO.	LOCATION	DATE EXAMINED	COLIFORMS PER 100 ML		5-DAY BOD	SOLIDS		TURBIDITY
			I.N.	M.F.		TOTAL	SUSP. DISS.	
	MARKHAM CREEK							
RGM-13.0 W	12" $\phi$ CORRUGATED GALVANIZED IRON STORM SEWER OUTLET	NOV. 27/63	NO FLOW NOTED					
		JAN. 31/64						
RGM-13.0 W-2	12" $\phi$ CORRUGATED GALVANIZED IRON STORM SEWER OUTLET	JAN. 31/64	NO FLOW NOTED					
RGM-13.3 W	10" $\phi$ CORRUGATED GALVANIZED IRON STORM SEWER OUTLET AT ROBINSON ST.	NOV. 27/63		27,000	2.0	250	1 249	
RGM-13.3 W-2	10" $\phi$ CORRUGATED GALVANIZED IRON STORM SEWER OUTLET AT ROBINSON ST.	NOV. 27/63	NO FLOW NOTED					





TABLE 1-4

SAMPLING POINT No.	LOCATION	DATE EXAMINED	COLIFORMS PER 100 ML		5-DAY BOD	SOLIDS		TURBIDITY
			I.N.	M.F.		TOTAL	SUSP.	
	<u>MARKHAM CREEK</u>							
RGM-13.3 W-3	10" Ø GALVANIZED IRON STORM SEWER OUTLET AT ROBINSON ST.	Nov.27/63	NO FLOW NOTED					
RGM-13.3 W-4	10" Ø GALVANIZED IRON STORM SEWER OUTLET AT ROBINSON ST.	Nov.27/63	NO FLOW NOTED					
RGM-13.3 W-5	10" Ø GALVANIZED IRON STORM SEWER OUTLET AT ROBINSON ST.	Nov.27/63	NO FLOW NOTED					
RGM-13.3 P	4" CAST IRON OUTLET AT ROBINSON ST.	Nov.27/63	NO FLOW NOTED					









